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Semantic web languages for policy enforcement in the internet of things

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Abstract

© Springer International Publishing AG 2018. To enable device compatibility, interoperability and integration in the Internet of Things (IoT), several ontological frameworks have been developed, using the Semantic Web technologies – a common and widely-adopted toolkit for addressing the heterogeneity issues in complex IT systems. These ontologies aim to provide a common vocabulary of terms to be universally adopted by the IoT community. Defined using the Web Ontology Language – a language underpinned by the Description Logics – these vocabularies, however, seem to neglect the automated reasoning support, which comes along with this semantic approach to model IoT environments. To bridge this gap, this paper builds upon the existing work in the area of semantic modelling for the IoT, and proposes utilising IoT ontologies to define and enforce policies, thus benefiting from the built-in support for automated reasoning.

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Keywords

Internet of Things, Policy management, Reasoning, Semantic Web, Semantic Web Rule Language, Web Ontology Language

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